

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Martin F. Berry et al. Art Unit : 1761
Serial No. : 09/447,023 Examiner : Helen Pratt
Filed : November 22, 1999
Title : CRANBERRY PROCESSES AND PRODUCTS

Commissioner for Patents
Washington, D.C. 20231

DECLARATION UNDER 37 CFR §1.132

1. I am a named inventor of the above-captioned patent application and an employee of the assignee of this application.

2. I have worked in the food products industry in a technical capacity for over 23 years. I earned a Bachelor's Degree in Chemical Engineering from the University of Rhode Island in 1970.

3. I have reviewed the pending claims in the above-referenced patent application and the Examiner's action dated April 29, 2002, along with the cited reference, Chiriboga et al., Journal of Food Science, 1973, pages 464-467 ("Chiriboga").

4. The pending independent claims are claims 70 and 97.

5. Claim 70 recites a cranberry food product that is a blended juice. The food product includes a cranberry juice component that has a juice anthocyanin content of about 10 mg/100ml or less and a component selected from another juice component, water, sweetener or acid. The juice component having the anthocyanin content of about 10 mg/100 ml or less is the sole component from cranberries in the blend.

CERTIFICATE OF MAILING BY FIRST CLASS MAIL

I hereby certify under 37 CFR §1.8(a) that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage on the date indicated below and is addressed to the Commissioner for Patents, Washington, D.C. 20231.

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6. Claim 97 recites a cranberry food product as a blended juice. The food product includes a cranberry juice component that has a juice anthocyanin content of about 10 mg/100ml or less, another juice component, and a sweetener. The juice component having the anthocyanin content of about 10 mg/100 ml or less is the sole component from cranberries in the blend.

7. An element of the claims discussed above is a cranberry juice component that has a juice anthocyanin content of about 10 mg/100ml or less as the sole component from canberries in the blend.

8. Other dependent claims, for example, claims 85, 86, 105, 106, recite that the cranberry juice component has even lower anthocyanin content (about 8 or 3.5 mg/100 ml or less). Claim 107, which is dependent on claim 70 and others, recites that the blended juice has a color determined substantially by the cranberry juice component.

9. As discussed in the specification of our patent application, the prior ordinary and commercially desirable color of cranberries, i.e. the deep red hue characteristic of cranberries, is substantially due to the presence of anthocyanin in the berries. The anthocyanin content of the juice component recited in our claims is low. Measurement of anthocyanin content of the juice component is discussed in our application (e.g. page 4, lines 7-17 and page 6, lines 1-10). One technique for obtaining this juice component is to cultivate berries so that many do not obtain a deep red color, and then color-select the very low color berries, which are typically white or pink, to substantially isolate berries with low anthocyanin content (see specification page 2, lines 17-18 and page 5, lines 10-page 6, line 10).

10. Prior to the inventions described in our patent application, it was convention in the industry to segregate lots of cranberries by color. Very low color berries, those being generally white in appearance, were typically relatively small in number and were considered undesirable.

11. The Ocean Spray protocol for color grading lots of berries that was in use prior to our inventions had six color grades. The lowest color grade was grade 1, which was for lots having a berry anthocyanin content of about 24 mg/100 g or less. The other color grades corresponded to higher anthocyanin content. For example, grade 2 corresponded to 25 to 29 mg/100 g and grade 6 corresponded to 60 to 69 mg/100 g or more. (The berry anthocyanin content is usually about twice the juice anthocyanin content. Note that even for color grade 1, the low juice anthocyanin level of the juice component in our claims would not necessarily be

provided.) The commercial value of the fruit, and the compensation to Ocean Spray's growers, was based in part on the color grade, with the more highly colored berries having greater value and the grower generally receiving greater payment.

12. For Ocean Spray cranberry juice cocktail (CJC), lots of different color grade, or juice derived from lots having different color grade, were typically blended to assure that the finished product conformed to a specified red color standard. The target red color for Ocean Spray CJC typically corresponded to a berry anthocyanin content of about 30 to 50 mg/100 g or more. The anthocyanin content of the corresponding juice ingredient derived from the berries is typically about 15 to 25 mg/100 ml. However, the anthocyanin content of the finished CJC product in which the juice component is diluted with water and other ingredients is typically about 4-7 mg/100 ml.

13. In the office action, the claims in our patent application stand rejected as obvious over a single reference, Chiriboga.

14. The objective in the Chiriboga reference is to produce an experimental CJC that has the characteristic red color of cranberry.

15. The rejection points in particular to Table 1 and indicates that Chiriboga discloses a juice component that contains anthocyanin content within the claimed range. This analysis of Table 1 is incorrect. Table 1 provides the anthocyanin content of experimental batches of CJC, not the anthocyanin content of the juice component(s) as an ingredient(s).

16. The experimental CJs in Table 1 were formulated by blending press juices from "dark" and relatively "pale" cranberries, and by adding crude anthocyanin powder (except for the first example in which no powder is added). While Chiriboga uses the terms "light" and "pale," the anthocyanin content of the "light" press juice is not reported. Nor can the anthocyanin content of the "light" press juice be reliably calculated from the data provided by Chiriboga. The Chiriboga article provides in Table 1 the "initial" anthocyanin content of the CJC resulting from the blending of "light" and "dark" press juices. The initial anthocyanin content is the content prior to adding anthocyanin extract. The Chiriboga article also provides the percentage of "light" press juice in the blends. The additional data needed to calculate the anthocyanin content of the "light" press juice is the anthocyanin content of the "dark" press juice.

I attempted to calculate the anthocyanin content of the "dark" press juice as follows. The first entry in Table 1 provides a CJC without any "light" press juice, meaning that only "dark" press juice was used. That example has an "initial" anthocyanin content of 13.8 mg/100 ml.

To try to determine the anthocyanin content of the "dark" press juice, I attempted to determine the amount of press juice in the experimental CJC's. According to Chiriboga, batches of 4.42 L of a first press juice, 1.70 L of second press juice (second press juice is obtained by soaking berries previously subjected to an initial pressing) and 10.88L of 15 brix sugar water solution were blended. The first experimental CJC in Table 1 included only "dark" press juice. Therefore, the percentage of "dark" press juice in the first experimental CJC was $(4.42 \text{ L} + 1.70 \text{ L}) / (4.42 \text{ L} + 1.70 \text{ L} + 10.88 \text{ L}) \times 100 = 36\%$ by volume. Since the only source of anthocyanin contributing to the "initial" anthocyanin content is the "dark" press juice, the "dark" press juice must have had an anthocyanin content of $(13.8 \text{ mg/100 ml}) / (0.36) = 38.33 \text{ mg/100 ml}$.

Using this anthocyanin level for the "dark" press juice, I then tried to calculate the anthocyanin content of the "light" press juice using the data in the second entry of Table 1, in which 5% "light" press juice was used. The calculation is as follows:

$$0.05 (X) + 0.95 (38.33 \text{ mg/100 ml}) = (9.8 \text{ mg/100 ml}) / (0.36)$$

Solving this computation for X yields an anthocyanin content for the "light" press juice which is a negative number. This cannot be correct since the "light" press juice could not have an anthocyanin content less than zero.

This discrepancy might be explained by the note in the Chiriboga article that the press juices were obtained from different lots of berries and therefore the initial pigment contents varied (see p. 465, middle column, first para). Thus, without the anthocyanin contents for each dark juice used, the anthocyanin content for the light juice cannot be reliably calculated. The calculation is also unreliable because the brix level of the press juices is not reported. As discussed in our patent application, juice anthocyanin content is normalized to 7.5 brix. The Chiriboga Ph.D. thesis, which is referenced in the Chiriboga article, appears to discuss the juice extraction at pages 46 and CJC formulation at pages 56-59. But this discussion does not appear to provide the data missing in the calculations above.

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Therefore, while the Chiriboga article uses terms like "pale" and "light" to describe certain batches of press juice, the anthocyanin content of the "light" press juice cannot be reliably calculated.

17. In my view, the Chiriboga article does not describe or suggest a blended juice product having as the sole component from cranberries, a juice component with an anthocyanin content of about 10 mg/100ml or less as claimed. Indeed, the Chiriboga article only exemplifies the conventional approach in the art in blending fruit or juices to provide CJC having a deep characteristic red color.

18. Since our inventions, Ocean Spray has marketed blended juice products in which a cranberry juice component having a juice anthocyanin content of about 10 mg/100 ml or less is the sole cranberry component in the blend. An example is the "White Cranberry" juice product. A story board for a television commercial for this product is attached as Exhibit F. The photographs illustrate the low color of the cranberries.

19. In addition, Ocean spray has modified its incentive program so that certain growers are compensated more for providing low color cranberries. As mentioned above, this is contrary to convention and is indicative of the non-obviousness and value of our inventions.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date: 9/30/02

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